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ABSTRACT

This paper uses three nuances of "informs." Firstly, it argues that writing forms (or shapes) science and science learning through the textual practices that are available to interpret and allowable to produce. These writing genres shape science discourse and must be challenged because available texts construct science as a rational field that discovers through the scientific method and the allowable genres construct science learning as recalling facts, processes, and theories. A study where teachers included imaginative writing in science learning as learning tasks is then described. The focus is on poetry, anthropomorphic narratives and travel brochures as representative imaginative genres. Samples from students in three secondary schools are discussed in the context of students' and teachers' perceptions of the impact on learning. It is concluded that writing informs (provides new insights into) science and science learning. Imaginative writing genres generate new ways of thinking science and teachers who use such tasks come to understand their students' learning in ways that teachers who rely on factual writing rarely can. Finally, it is argued that science itself has always been informed by imaginative writings: writings using metaphorical devices, allegories, and imagery. Contains 63 references. (Author)

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Writing in/forms Science and Science Learning

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Writing in/forms science and science learning

A paper presented at the
National Association for Research in Science Teaching
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Abstract:

This paper uses three nuances of "in/forms". Firstly, it argues that writing FORMS (or shapes) science and science learning through the textual practices that are available to interpret and allowable to produce. These writing genres shape science discourse and must be challenged because a) the available texts construct science as a rational field that 'discovers' through the 'scientific method'; b) the allowable genres construct science learning as recalling facts, processes and theories. Secondly, this paper describes a study where teachers included imaginative writing IN science learning: that is, as learning tasks. The focus is on poetry, anthropomorphic narratives and travel brochures as representative imaginative genres. Samples from students in three secondary schools are discussed in the context of students', and their teachers', perceptions of the impact on learning. Thirdly, this paper concludes that writing INFORMS (provides new insights into) science and science learning. Imaginative writing genres generate new ways of 'thinking' science and teachers who use such tasks come to understand their students' learning in ways that teachers who rely on factual writing rarely can. Finally, it is argued that science itself has always been informed by imaginative writing: writing using metaphorical devices, allegories and imagery.

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Introduction:

The work reported here is one phase of a larger study mapping exemplar usage of imaginative writing, sometimes called 'creative' or 'expressive' writing, within the context of secondary science teaching across the three dimensions of interpretation, implementation and impact (both cognitive and affective).

In beginning this study, I recalled a popular argument which regularly circulates amongst workers in the field of gender and science education. It goes something like this:

> Girls have distinct learning style preferences, interests, values, concerns and desires which need to be explicitly catered for by science teachers. But, teachers largely fail to satisfy girls' learning needs, resulting in many girls coming to feel that they do not 'really' understand science, or see its relevance to their lives.

This argument goes on to propose that these feelings are major reasons for girls' disenfranchisement from science, and to propose that a greater variety in teaching strategies, some aimed directly at girls' learning needs, would solve the concerns about girls' access to higher levels of study in science-linked fields.

The central theme of this argument, the concept of 'enabling pedagogies' for girls in science, has become the broad domain of this research. Yet, as Henry Giroux notes:

> "To invoke the importance of pedagogy is to raise questions not simply about how students learn but also how educators [...] construct the ideological and political positions from which they speak." (Giroux, 1992, p. 81)

Whilst it is still unclear what 'enabling pedagogies' might actually be, speculation on them is becoming more focussed as a central concern of feminist educators (e.g. Shrewsbury, 1987; Roy & Schen, 1987; Gore, 1993) and is the other side of the ground-breaking work of Carol Gilligan (1982) which has been followed up by researchers such as Belenky et al (1986) and Rosser (1990). Australian studies found that "the quality of teaching and learning is of paramount concern to girls". (Australian Education Council, 1993: p. 43) and also that girls are more troubled than boys by their belief that they don't "really understand", and consequently withdraw from courses/subjects (Allard et al, 1995).

Recognising that many girls may be looking for qualitative understanding and not simplistic manipulation of quantitative data is also important in some subject areas. For example:

> "My curiosity simply did not extend to the quantitative solution. I just didn't care to figure out how much. I was more concerned with the 'why' and the 'how'. I wanted verbal explanations with formulae and

Gardner, 1974; Hattam, 1994) who have documented students' difficulties with such forms.

> "The language of classroom science sets up a pervasive and false opposition between a world of objective, authoritative, impersonal, humourless scientific fact and the ordinary, personal world of human uncertainties, judgments, values and interests." (Lemke, 1990, p.129-30)

Thus I contend that the current emphasis on using only factual, or 'scientific', genres in the process of learning science may:

- inhibit learning processes;
- alienate many students, especially girls;
- construct an imaginary world of science;
- promote a sexist, Western, neo-Colonial science-as-usual.

Authors, such as Green and Lee (1994), and Freedman and Medway (1994) challenge whether other forms of writing might access students into disciplines like science, allowing them to see the values that underpin its practice, without them "acceding to dominant values and denying important differences" (Freedman and Medway, 1994, p. 15) of perspective, such as those of women or people of non-Western cultures. Others propose that whilst students need to understand and manipulate the hegemonic genres of power in science, they can also be fruitfully asked to "bend the genre" and not leave this task only to "the most prestigious members" of science (Berkenkotter and Huckin, 1995, p.159). The texts that students produce can be vehicles for challenging what is understood as science learning.

Language helps students build for themselves representations of reality; such active learning is said to be constructing "a theory of the world in the head" (Smith, 1975). Vygotsky further extends the role of language in learning by saying that: "personally meaningful knowledge is socially constructed through shared understandings." (Vygotsky, 1978) The importance of reaching shared meanings of language, particularly between teachers and students, has been well documented for science by Osborne and Freyberg (1985) among others.

Although there are many important differences between, and within, the views on learning of science education constructivists (e.g. Driver, Guesne & Tiberghien, 1985; Osborne and Freyberg, 1985; Fensham , Gunstone & White, 1994) and feminist educators (e.g. Walkerdine, 1990; Luke and Gore, 1992; Kirkup and Keller, 1992), both groups strongly agree on the centrality and power of language in shaping our understandings and constructions of the world about us.

Writing IN science learning: a case study

Secondly, this paper describes a study where teachers broadened the allowable writing IN science learning: that is, the writing tasks they designed for their students incorporated a range of imaginative forms. (I do not have the space here to fully discuss writing in science itself.)

Writing is advocated as a tool for learning particularly by those who promote "scientific literacy". (e.g. Martin, 1990; Sturgiss, 1994; Schibeci and Kissane, 19 In discussing why university professors ask their students to write, across a fu range of disciplines, Zinsser summarises their views: "Writing helps them [t students] to organise their plan [...] It also expands their thinking and raises further questions that they ought to be asking." (Zinsser, 1989, p.54) Yet Riva in his recent review of writing to learn science concluded that we need much more research in authentic classroom environments to understand more dee the writing-learning connection. (Rivard, 1994)

Clive Sutton thinks that science teachers have generally "accorded too low a status" to word-based activities "compared with practical work". He is concer that teaching schemes often focus on practical investigations and less often on "thinking, talking and writing activities" because learners need to have space "reflect on ideas" and teachers need to "organise the means for them to do so" (Sutton, 1992, p. 3).

Many writers have noted that text, or language in its multiple forms, does not stand alone but rather is reacted to, and interpreted by, the 'reader'. In the context of science learning, Clive Sutton considers that words and language are used as a way of "trying out a framework of understanding, some way of thinking about the topic in hand, some way of seeing what is going on. When others hear and repeat such words they too are engaging with that way of theorising." (Sutton, 1992, p. 11)

Martin (1990), believes that "... in practice, every genre that science teachers expect their students to write needs to be deconstructed ... and taught explicitly" if the students are to learn. McNamara et al (1987) have put together a manual for assisting science teachers in using writing and others (e.g. Sturgiss 1994; Baker and McLoughlin, 1994; Schibeci and Kissane, 1994) have trialled, and reported on, various programs which assist science teachers in learning about the complexities of teaching factual writing genres in science.

Imaginative writing is frequently proposed as a means of overcoming girls' reluctance to continue with science once they reach post-compulsory levels. (e Smail, 1987; Lewis and Davies, 1988; Gianello, 1988; Stocklmayer, 1989; McClintock Collective, 1989; Davies and Steiger, 1994; Warner and Wallace, 1 It is a practice that is advocated as a way of learning science, which girls

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The questions reported on In this paper are:

- **Why do science teachers use imaginative writing?**
- **How do teachers structure the tasks?**
- **What evidence is there to support claims made by teachers about the benefits of using imaginative writing to learn science?**

This study reports on three secondary science teachers, each from different schools, who were interviewed twice about using imaginative writing in their classes. They were also observed whilst using this pedagogical practice. The sample of teachers reported here all chose to use imaginative writing genres because of their ideological expectation that it would be enabling for, at least, the girls in their classes. Student written responses included Likert-type attitude scales and several open-ended sentence stems. Fifteen students were also interviewed: five from each of the three observed classes/schools. Samples of students' writing products were analysed for, among other things, the scientific conceptions they contained, but this paper does not report that data.

This paper focuses only on poetry, anthropomorphic narratives and travel brochures as representative of possible imaginative genres (see sample tasks and student work in the Appendix). Other imaginative writing tasks, such as personal journals, futuristic newspaper stories, letters, scripts for television shows and romance stories were also used by the teachers in this study.

Reasons teachers use imaginative writing in science:

All three teachers reported here had the initial impetus to use imaginative writing as a means of trying to find ways that girls could use skills they are able to transfer from other subject areas to learning science. Once they tried imaginative writing they believed that it supported synthesis of ideas in ways that few other activities do, and these teachers felt that creative responses enabled students to link their learning to their own world.

Indicative teachers comments:

"they have to put it in their own words and re-work ideas"

The ways that teachers are able to detect levels of conceptual understanding by reading students imaginative writing pieces is a recurring theme in teacher reasons. For example:

"it really gets the kids to internalise [ideas] and understand what it's all about ... it is one of the most effective things I have used to really see if they understand what is going on. They can't fool you in creative writing tasks. Look, even in prac reports they can get the answers from another kid. Or there is nothing in a research project now to stop kids just down loading slabs of information from a CD-Rom, or copying it from a text book. In a[n imaginative] writing task they really have to show their application of ideas.

They have to reorganise it - they cannot just take information and transcribe it. They have to be able to understand the information in their head to be able to write the story."

The distinction between understanding the ideas, and being able to translate them into new contexts, is one used repeatedly by other teachers also interviewed as part of this larger project. Teachers also see this as a positive when assessing students work - the variety in story-lines in narratives for example, make authentication of student work easy - they cannot copy each others work. One teacher added:

"it makes kids work a lot more interesting to read ... and it shows you straigh away whether they know the links between terms and how ideas relate to each other."

Imaginative writing is also seen as a memorable activity, where the learning gained is more firmly embedded in students' minds:

"It's difficult to learn facts and if they can do it in a fun way they can associate it with something then it stays [in their minds] ... in fact a couple of kids said to me the other day 'we still remember those element songs from year 7' and they're in year 9, now. If they become actively engaged like this, they're going to remember at least the major things."

The potential of imaginative writing as a way to help students move beyond a narrow, decontextualised view of science is summed up in the following teacher's comment:

"You can get some divergent thinking going and explore an idea more thoroughly."

Another theme that is emerging from the interview data is that students become writers who are actively constructing meaning because the tasks engage students in thinking and learning, constructing ideas through language practices, is a necessary outcome of doing these types of tasks.

The benefit claims of using imaginative writing to learn science is summed up below.

Writing in imaginative forms in science has the potential to help students:

- clarify their thinking;
- explore relationships;
- challenge and expand their conceptions;
- think beyond the "blinkers" the teacher usually provides;
- tentatively integrate new learnings with old knowledge;
- reflect on ideas;
- be original thinkers;
- remember ideas longer;

Evidence to support claims of benefits:

Indicative student responses include:

A. Sentence Completions
Students were asked to complete two sentences as shown below.

Positive:
The best thing about creative writing in science is...

we can use our own ideas and have an opinion. (girl, year 9)

it stays in your mind. (girl, year 9)

being able to use your brain. (girl, year 8)

that we learn more as we don't get bored and start flicking bits of paper around the room. (girl, year 7)

that you can talk to people about information. (boy, year 7)

you can visualise what happens. (girl year9)

that I learn more about the subject. (girl year 10)

it helps you understand things in an easier way. (boy, year 8)

we learn what things mean. (boy, year 8)

you can look at it from a different point of view - an easier way to explain things. (girl, year 9)

that you have to go out and do the research on the topic and it gives you a chance to find out so much more. (girl, year 11)

it gets me motivated. (girl, year 11)

Negative:

Creative writing in science would be better if...

we didn't have to do it. (girl, year 9)

we could choose our own ideas to write on. (girl, year 8)

you had more time to do it. (girl, year 7)

we had more guidelines of what you had to do. (boy, year 10)

it weren't so creative. (girl, year 11)

we spent more time in class working together on it. (boy, year 11)

B. Interviews:

Positive:

I just like it because it's more fun than doing textbook stuff. It's not as boring. I guess we can do some thinking for ourselves. We're more interested in it. (girl, year 7)

When you're doing [imaginative] writing it's in your own words and it sticks in your head, so that you always know about atoms and cells and things. (girl, year 7)

I found it better than normal work in science. I found it easier because I really like doing poems. It helped me learn, because I had to read and find out the meaning of words for my poem. (girl, year 10)

It is easier to explain things that way because you can associate them with other things. (girl, year 8)

It was good, we could do our own research and express ourselves in different ways. (boy, year 7)

I'd like to do more creative writing because it helps you get more information. We didn't really know about the topic until we started writing the story. (boy, year 8)

Negative:

I thought that it was really silly: it wasn't science- so I decided not to do it. (boy, year 9)

I don't like it: I just can't do it. I get too confused. (girl, year 10)

I didn't like doing it. I found it difficult. I started and finished a couple of times. (boy, year 10)

It's very hard to get motivated to actually put something down on paper. Well, I just had to sit down and think! Think of something to write about. (boy, year 10)

In the words of one student (above):
We didn't really know about the topic until we started writing the story.
sums up a general view that pervaded many student responses. The other key theme was that imaginative writing is *more fun* than other tasks.

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Year 7 Science

A True(?) Story:

"It's BEAN a long Time!"

or

"Where Have You BEAN All My Life?"

"Hi!
I'm NOT a Baked Bean, a Lima Bean
or a Has Bean.
I am Broad Bean! - a Dictotyledon!

I am presently living in a comfortable seed packet (on the shelf in a plant shop) with many other members of my family.

I'm waiting patiently to be planted, as I really want to become an adult plant and maybe produce my own family of seeds some day.

Can you help me? I'm not sure of how I can become an adult. BUT, your advice must be very clear and accurate, as I'm not a very good scholar."

(OPTIONAL: How will BB flower and develop new seeds in pods?)

.....THE BEAN SAGA CONTINUES .....

(hasn't it BEAN a long list of instructions?)

- Your assistance/advice for BROAD BEAN can be presented in a format chosen by you: comic strip, pictures, writing, poster, flow-chart, poem, letter etc,

BUT

- It must show the correct sequence of stages of development

AND

- You must use the appropriate scientific terminology as indicated.

To assist this seed to develop into a plant, you need to creatively and clearly relate the steps that BROAD BEAN should take in its amazing development from Seed to Adult Plant.

In order to do this, you might need to do some preliminary investigating/research to help you to creatively, but authentically, write about the developmental stages from seed to plant.

YOU SHOULD INCLUDE THE FOLLOWING:

- **A description of BROAD BEAN (maybe a diagram?) to include Testa, Hilum, Dormancy, Cotyledons, Dicotyledon.**
- **How would you assist or advise a bean to commence germination? Include these terms: Embryo, Water, Micropyle.**
- **Where will BROAD BEAN get its food/energy from in order to start growing? Explain how BB will lose weight as it starts to grow.**
- **~~Show BB what stages~~ of growth it will go through so it will clearly understand its changes and development. Include Plumule, Radicle, Shoot, Root.**
- **Explain how BB will eventually become a plant with Leaves, Roots, and, how these will assist it to develop into a fully grown adult plant. Explain about Photosynthesis and Water Uptake if you understand these two processes.**

REFERENCES AND HELP

- Your Notebook: Diary of a Germinating Seed.
- "Growing With Horticulture" - Class Set.
- Printed Reference Sheets. (Handout).

ASSESSMENT

The following will be taken into account:

1. Interest generated through creativity/presentation/format.
2. Accuracy of advice given to BB.
3. Use of correct scientific terminology.
4. Understanding of the terms used.

DUE DATE:.....

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CREATIVE WRITING TASK - ROULA THE RED BLOOD CELL

Roula the Red Blood cell has just been formed in the bone marrow. She leaves her home in Marrowville, to enter the blood stream. On her journey in the blood stream, she will see many new and amazing things. She will have all sorts of experiences.

.....It is up to you to tell her story.

Task: You will be producing a piece of creative writing which tells the story of Roula's journey from the point at which she enters the blood stream, through the circulatory system to various parts of the body.

How do I start ?
Just like any piece of creative writing, you need to make a draft copy first. In this case, the draft copy needs to be in the form of a flow diagram which will show the story written as brief notes in the order it will be presented from beginning to end. (Remember flow diagrams? We spent a long time on them in the Q.A. unit - look back if you've forgotten.)

How is this being marked?
The following four points will be the ones that your story will be assessed on.
For each point, you will be assessed as High, Medium, Low or Not Shown. (This is kind of like V.C.E.) You will also receive an overall mark.
Here are the points:
a) to accurately communicate information about how each of the following words is a part of the circulatory system:
right and left atrium, right and left ventricle, lungs, body cells, capillaries, intestines, kidneys, urea, carbon dioxide, oxygen, white blood cells, platelets, pulmonary artery and vein, aorta, vena cava, red blood cell.

b) to show in your story why we need a circulatory system.

Year 9 Science

c) to show simply how the circulatory system is linked with othe body processes eg. breathing system, digestive system ,excretor system and the work of the body cells.

d) to be able to show scientific information in a fun and interesti way that would entertain and inform the audience you choose.

The audience? What do you mean?
You may decide the kind of people for whom you are writing.
These may be:
Primary kids
Teenagers
Adults (any particular group?)
You MUST choose a particular audience to which you will target your writing.

OK....What now?
Well, I think you're just about ready to start.
Remember to go back through your work for ideas as well as usi other resources.
Once you have written your draft (flow diagram) you MUST hav this checked by a "buddy". Your buddy will fill out a sheet with helpful comments. **Your draft will form part of your assessment.**

Any ideas for writing?
Here's some, but I'll bet you have plenty of good ones.
A letter home from Roula to her family in Marrowville.
Roula Red Blood Cell...This is your Life!
Diary of Roula's adventures. (Day 1 - I've arrived!)
TV. chat show - Roula's world.
Conversation between Roula and other components of blood stream.
True romance - Roula meets Ollie Oxygen.

HEY! THIS IS IMPORTANT! WHEN IS THIS DUE IN?
DRAFT DUE: Mon 13th Nov 95

FINAL COPY DUE: Tues 21st Nov 95

Thurs 9 Nov 9

Wow! It's even bigger than the Vein, this Main one is, and even more crowded; I think this is where all roads coming in this direction sort of meet. And soon we should be in the.....

Wow! Heart! It's huge! (I'm saying 'Wow!' a lot, my English teacher would kill me!) But this is really amazing, like, it's the biggest sort of room I've ever seen! And the noise! But I guess it's always been there and I didn't notice. Such thumping could damage one's ears, if one had any. Hey, it's pretty unstable in here; heavy pumping and that... and I'm in the Right Ventricle. I think it's called that because it's not the wrong one. How's that for some good science info? Everyone's giving me weird looks, I think it's because they think I'm talking to myself. Little do they know, hey?

Oh. They just told me they were looking at me funny because Right Ventricle is Right as opposed to Left, not wrong.

I'm so embarrassed.

Oh well, cheer up Roulie Babe, no cell's perfect.

And I am now in the... Pulmonary Artery, that's cool, they've started using roadsigns.

And here we go past the lungs and... yikes! Here's all the oxygen for my haemoglobin to carry. It's heavy. Why do I have to carry so much? I think it's unfair! They're exploiting me! That's it. I'm joining the union.

I guess I should be glad to have lost my.. you know, nucleus. Because otherwise I couldn't carry all this stuff.

And I've been told to take it to foot cell number 1036. Glad I can count.

And here I come back to the heart through the Pulmonary Vein.

And the LEFT Atrium (I'm still embarrassed about that).

Left Ventricle.... this is all old hat to me now. Wheeeeeeeeeee! This'd be fun if I didn't have to carry this dead weight of oxygen. Actually it's not really *heavy* so much as filling. Makes me feel all bloated-ish or something.

And now I think we're going into the Aorta. Freaky, this is fast. We've hit the Artery now and there's a really strong kind of current pushing us along. I suppose that's because we're all charged up with oxygen and have to travel fast to deliver the goods.

It's like a totally different atmosphere in the Artery. The walls seem more... solid. And thick, I guess. More muscle than the Vein, which seemed to have none at all. See, there needs to be more muscle to create the strong current that is dragging us along. Ooh, that was all very scientific talking I was doing then. It's good to know something. I feel very smart now, makes up for the WRONG ventricle a bit!

Hey, I just thought! (and I'm doing a lot of that now) I still don't know if you can hear me out there, if this mike's working and all; maybe I *am* just chatting away to myself, what an embarrassment!

Well, who cares, at least I'm keeping myself company by talking. There isn't anyone I know around here anymore, and I'm getting homesick.

And Roulie Babe rounds the corner and - whoa! - is bombarded with sugars. Folks, what a spectacular sight! All these sugars! They seem to be seeping out through the side of... aha! the intestine! Roula can remember now, through the intestine all the processed food is travelling (yuk) and these sugars are really useful, so they're staying in the body while the rest..... goes away. Roula racks her brain for the various names of the sugars, but can only remember one: Hydrocarbon. Don't you just think that's a grouse name? I think that's why I remembered it. Lucky, because it looks like these little Hydrobabes are quite attached to me. Looks like we'll be travelling to the foot cell together. Pity they can't talk.

We're almost at the turn-off now, where we'll head down the capillary to the group of cells I'm after. Yippee! At last I can be rid of all this oxygen that's really dragging me down.

And here we go, Hydrobabes, we'll be in the capillary before you can say... can say, um, say... well, before you can think of anything to say.

See! Here we are, and I bet you didn't even think, Hydrobabes, did you?

Gee, I hate these stifling capillaries! And I'm sick of talking to these almost inanimate beings.

I'm at the cell at last, number 1036, and Man, does it look tired and hungry.

Lucky I'm here then, it needs energy. Goodness, I've never done this before, let's see if I can remember what I have to do.

Well, I can dump all this stuff.. Phewf, what a relief! And it looks as though the little foot cell appreciates it, too. And now the Hydrobabes have joined the oxygen .... and wow! Check that out! Well, I guess you can't, but it's truly amazing! The oxygen and the Hydrocarbon just turned into something that looks like ... well, certainly energy; that cell's quite fired up; and there's just plain water; and carbon dioxide. I guess that's what I'll be carting all the way back to base. Never a break, is there?

Well, I hope you big-shot scientists appreciate the amount of work I'm doing here, and all the rest of us. If it weren't for us you'd be dead. Seriously dead. So after a hard day's work, just think about us; still toiling away, no holiday breaks, no sick leave. Really, you guys have it easy.

Some more Creative Writing Ideas

The atoms party

Liz James
McClintock Collective and
Healesville Learning Centre
Melbourne Vic 3000

This is a *creative writing* activity suitable for Year 9 to 11 students studying chemistry.

YOUR TASK

- Prepare a script as set out below.
- Your writing must be based on scientific concepts, but the story line is fictional. Be as creative as you like: give characters names and personalities; use drawings if you wish. Strip cartoon format is also acceptable.

SCENE ONE

Yes, the atoms are having a party, and you, an oxygen atom, are invited to attend.

The food is free and the music is booming. After a while of partying you notice that a new relationship begins to develop. Two of the guests, sodium and chlorine have been looking at each other (across a crowded room) all evening, and now they are moving closer together. It looks like the beginning of a special relationship!

Describe what you observe, the exchanges that occur, and the manner in which the relationship appears to develop!

Is it a lasting friendship or does it dissolve with no happy solution?

Include the following terms in your description: ions, cation, anion, positive charge, negative charge, electrons, bonding and shells.

SCENE TWO

While all this is happening, you are being drawn into a strange relationship yourself. As one of the few oxygen atoms at the party, you find yourself the topic of conversation amongst a nearby group of happy hydrogen atoms.

Suddenly, two of the hydrogen atoms move away from their group and approach you. The music continues to fill the room.

What happens to you during the rest of the evening? What type of relationship are you drawn into? Is this the beginning of a watery affair?

Include the following terms in your description: covalent, electrons, shells and sharing.

Note: This activity first appeared in the *McClintock Memos*, Volume 8, December, 1987. (Reprinted with permission.)

Creative writing ideas

McClintock Collective
11 Paterson Street
Hawthorn Vic 3122

JUNIOR SECONDARY SCIENCE

- Write a letter to a person who fears fire from a Bunsen Burner's point of view.
- Act One: In the year 2090 the ozone layer is

almost gone. Describe life on Earth.

- Act Two: You travel back in time to the year 1990. Describe what you do to save the ozone layer and thus change the course of history.
- Write a letter to your ten-year-old cousin, telling her what you think she ought to know before she has her first period.

BIOLOGY

- Write a conversation between two cells as they divide.
- You are an oxygen molecule about to enter a person's nose. Write brief journal entries for each two-minute slot in the next half hour.
- You are a part of the lower intestine. Describe the conversations you have with those that pass through you.

CHEMISTRY

- You are a water molecule: what has been happening to you in the last month?
- Write a conversation between two electrodes in a galvanic cell.
- You are an atom of aluminium in Portland. Write a letter to your sister in Weipa, describing what has happened to you since you left home.

EARTH SCIENCE NOTES

- Script a news item which explains the findings of Voyager II on its visit to Neptune's moon. (To be completed before the visit!)

- You are a large granite rock. Talk about yourself.
- Write the book: Tales of long ago. By a fossilised shell.

PHYSICS

- You are a pendulum in a grandmother clock. Talk to the minute hand and compare notes about your respective energy changes (kinetic, etc).
- You are a photon of light emitted from a tungsten filament. Write a letter home describing your travels.
- You are a netball. Talk with the goal post about the forces you both experience.

BEST COPY AVAILABLE

Chemicals

Student Activity Sheet

Try some creative writing.

- Select a topic from the 'topic ideas' below.
- Use the student instruction, planning, construction and checklist guides to help you with your planning.

from Creative Activities in Science Hook & Ingram (Longman) 1990

Imagine!

■ You are an 'hungry ' enzyme in cold water soap powder. Explain your delight at seeing and acting on dirty clothes in the wash.

■ You are a tree that has been buried for millions of years. Explain what has happened to you during this time.

■ You are the Earth's protective ozone layer. . . Oh no! What's happening to you?

■ You are a dietitian planning a healthy diet for an over weight person. Discuss how you would go about it.

■ You are a cigarette being smoked. What changes are happening to your body?

■ You are an oxygen atom. Account for some of the interesting things that have happened in your life.

■ You are a rabbit in a laboratory of a cosmetics company. How do you feel about the tests they do on you?

■ You are a glass of whisky inside a human stomach. Describe what you are going to do to this unsuspecting person.

■ You are a fertiliser. Describe your adventures in getting into a plant and helping it grow.

■ You are a metal ore in the ground. Recount what happens to you as you are turned into a can.

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